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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/738,346	12/17/2003	James R. Butler	API-1077 (COS-887)	9677

25264 7590 01/11/2005

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EXAMINER

PRICE, CARL D

ART UNIT	PAPER NUMBER
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3749

DATE MAILED: 01/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/738,346	Applicant(s) BUTLER, JAMES R.	
	Examiner CARL D. PRICE	Art Unit 3749	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12/17/04 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>05/03/04; 08/12/04</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Information Disclosure Statement

The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the computer controller, feedback loop, sensor, etc., (e.g. - claims 4-8, 19 and 21-26) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement

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Sheet” in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, 3, 15, 19, 20, 21 and 27 are rejected under 35 U.S.C. 102(e) as being anticipated by US006763886 (Schoeling et al).

US006763886 (Schoeling et al) shows (Figure 28) and discloses a process heater and method for heating a process streams comprising:

- oxidizing a fuel at a reaction temperature to generate heat via a flameless reaction;
- and
- using the heat generated via the flameless reaction to convert water to steam or heat other process streams;

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- wherein the reaction temperature is controlled to minimize the formation of NO_x (see paragraph nos. –“(12)”, “(153)”, “(241)” –“(243)”).

US006763886 (Schoeling et al) discloses:

(12) A **flameless combustor** may be used to combust a fuel within a well. U.S. Pat. No. 5,255,742 to Mikus, U.S. Pat. No. 5,404,952 to Vinegar et al., U.S. Pat. No. 5,862,858 to Wellington et al., and U.S. Pat. No. 5,899,269 to Wellington et al., which are incorporated by reference as if fully set forth herein, describe flameless combustors. Flameless combustion may be accomplished by preheating a fuel and combustion air to a temperature above an auto-ignition temperature of the mixture. The fuel and combustion air may be mixed in a heating zone to combust. In the heating zone of the flameless combustor, a catalytic surface may be provided to lower the auto-ignition temperature of the fuel and air mixture.

(74) Certain embodiments may include providing heat from one or more heat sources to heat the formation to a temperature sufficient to allow synthesis gas generation (e.g., in a range of approximately 400.degree. C. to approximately 1200.degree. C. or higher). At a lower end of the temperature range, generated synthesis gas may have a high hydrogen (H₂) to carbon monoxide (CO) ratio. At an upper end of the temperature range, generated synthesis gas may include mostly H₂ and CO in lower ratios (e.g., approximately a 1:1 ratio). Heat sources for synthesis gas production may include any of the heat sources as described in any of the embodiments set forth herein. Alternatively, heating may include transferring heat from a heat transfer fluid (e.g., steam or combustion products from a burner) flowing within a plurality of wellbores within the formation.

“(153) Reaction of the fuel fluid and the oxidizing fluid may produce heat. The fuel fluid and the oxidizing fluid may have characteristics herein. The fuel fluid may be, for example, natural gas, ethane, hydrogen or synthesis gas that is generated in the in situ process in another part of the formation. The produced heat may be configured to heat portion 518 to a temperature sufficient to support oxidation of hydrocarbons. Upon heating of portion 518 to a temperature sufficient to support oxidation, a flow of fuel fluid into opening 514 may be turned down or may be turned off. Alternatively, the supply of fuel may be continued throughout the heating of the formation, thereby utilizing the stored heat in the carbon to maintain the temperature in opening 514 above the autoignition temperature of the fuel.

(241) FIG. 28 illustrates an embodiment of a flameless combustor configured to heat a section of the coal formation. The flameless combustor may include center tube 637 disposed within inner conduit 638. Center tube 637 and inner conduit 638 may be placed within outer conduit 636. Outer conduit 636 may be disposed within opening 514 in formation 516. Fuel fluid 621 may be provided into the flameless combustor through center tube 637. Fuel fluid 621 may include any of the fuel fluids described herein. If a hydrocarbon fuel such as

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methane is utilized, it may be mixed with steam to prevent coking in center tube 637. If hydrogen is used as the fuel, no steam may be required.

(242) Center tube 637 may include flow mechanisms 635 (e.g., flow orifices) disposed within an oxidation region to allow a flow of fuel fluid 621 into inner conduit 638. Flow mechanisms 635 may control a flow of fuel fluid 621 into inner conduit 638 such that the flow of fuel fluid 621 is not dependent on a pressure in inner conduit 638. Flow mechanisms 635 may have characteristics as described herein. Oxidizing fluid 623 may be provided into the combustor through inner conduit 638. Oxidizing fluid 623 may be provided from oxidizing fluid source 508. Oxidizing fluid 623 may include any of the oxidizing fluids as described in above embodiments. Flow mechanisms 635 on center tube 637 may be configured to inhibit flow of oxidizing fluid 623 into center tube 637.

(243) Oxidizing fluid 621 may mix with fuel fluid 621 in the oxidation region of inner conduit 638. Either oxidizing fluid 623 or fuel fluid 621, or a combination of both, may be preheated external to the combustor to a temperature sufficient to support oxidation of fuel fluid 621. Oxidation of fuel fluid 621 may provide heat generation within outer conduit 636. The generated heat may provide heat to at least a portion of a coal formation proximate to the oxidation region of inner conduit 638. Products 625 from oxidation of fuel fluid 621 may be removed through outer conduit 636 outside inner conduit 638. Heat exchange between the downgoing oxidizing fluid and the upgoing combustion products in the overburden results in enhanced thermal efficiency. A flow of removed combustion products 625 may be balanced with a flow of fuel fluid 621 and oxidizing fluid 623 to maintain a temperature above autoignition temperature but below a temperature sufficient to produce substantial oxides of nitrogen. Also, a constant flow of fluids may provide a substantially uniform temperature distribution within the oxidation region of inner conduit 638. Outer conduit 636 may be, for example, a stainless steel tube. In this manner, heating of at least the portion of the coal formation may be substantially uniform. As described above, the lower operating temperature may also provide a less expensive metallurgical cost associated with the heating system.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 4-14 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over US006763886 (Schoeling et al).

US006763886 (Schoeling et al) discloses the invention substantially as set forth in the claims with possible exception to:

- the combustion temperature are adjusted by a computer,
- the controller is a feedback loop between a sensor and a process controller;
- the process controller is a flow controller or a pressure controller;
- the temperature is controlled by adjusting the reactant pressure, the reactant is fuel, and which in turn adjusts the amount of fuel being fed to the flameless reaction;
- the amount of NO_x present is in a flue gas from the flameless reaction, and is present at less than about 10 PPMV, 5 PPMV or 3 PPMV;
- temperature of the fuel and the difference between the reaction temperature and the auto-ignition temperature of the fuel is less than or equal to about 100F (38C), less than or equal to about 75F (24C) or less than or equal to about 50F (10C);
- the difference between the reaction temperature and the auto-ignition temperature of the fuel is less than or equal to about 25F (-4C); and
- the sensor is a flue gas NO_x sensor.

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In regard to claims 4-14 and 16-18, Official Notice is taken that it is well known to adjust one or more process variables in combustion reaction systems by means of computer, feedback control loop, sensed flue gas NO_x, etc. in the manner set forth in applicant's claims. Thus, to use such means for the purpose of adjusting and controlling the process of US006763886 (Schoeling et al) to operate within desired parameters, would have been obvious to a person having ordinary skill in the art in view of that which is well known. Also, in regard to claims 4-14 and 16-18, since the amount of NO_x produced, the fuel temperature, reaction temperature, auto-ignition temperature, etc. would depend on numerous design considerations such as the type of flue, the amount of oxygen in the oxidant, desired reactant temperature, the shape and size of the precess heater, etc., to operate a process such as that disclosed in US006763886 (Schoeling et al) according to the parameters set forth in applicant's claims can be viewed as nothing more than merely a matter of choice in design absent the showing of any new or unexpected results produced therefrom over the prior art of record.

USPTO CUSTOMER CONTACT INFORMATION

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CARL D. PRICE whose telephone number is (571) 272-4880. The examiner can normally be reached on Monday through Friday between 6:30am-3:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ira Lazarus can be reached on (571) 272-4877. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Carl D. Price', with a stylized, cursive script.

CARL D. PRICE
Primary Examiner
Art Unit 3749

CP